

GENERAL NOTES MADE DURING A VISIT TO MOUNT  
SASSAFRAS, SHOALHAVEN DISTRICT, BY MESSRS.  
R. ETHERIDGE JUNR., AND J. A. THORPE.

By R. ETHERIDGE, JUNR., Palæontologist to the Australian  
Museum and Geological Survey of N. S. Wales.

THE following "Notes" were collected during a ten days' trip from Tarago, on the Cooma Branch of the Southern Railway to Mayfield, the residence of Mr. C. H. Roberts, J. P., on Boro Creek, a tributary of the Shoalhaven River, and thence to Mount Sassafras, in the Parish of Sassafras, County St. Vincent. The rapid movements of the party render the "Notes" but imperfect and tentative at the best, but as such, it is hoped they may be found of some service to future travellers in that district.

*Geology.*—Between Tarago and Mayfield the country is gently undulating, speaking generally, and but little rock is visible in place, the aspect of the ground, however, is that generally assumed by rocks of Silurian age, hidden by a surfacing of local drift or wash.

At Mayfield the configuration of the ground is more rugged, grits, greywackes, and altered mudstones being exposed along the flanks and summits of the ranges, and these I take to be without doubt of Silurian age. The average height of these ranges, taking the Mayfield Trigonometrical Station as an example, is about 500 feet above the flat, although of course some of the hills ascend to a much greater altitude.

Immediately opposite Mayfield Homestead pinkish ternary granite occurs in the creek bed, and is traceable along the alluvial flat for some little distance down the creek.

In the home paddock to the west of the homestead occurs a low hillock of ironstone. An opportunity did not permit of my ascertaining the precise relations of this deposit to the surrounding Silurian rocks. It may be a reef in them, or form a capping of Tertiary ironstone, unconformable to the former, and I am rather inclined to favour this view. In the Boro Creek, in a direct north-easterly line from this point occurs a highly altered white siliceous grit of a very remarkable character. The soil on the western side of the Boro Creek is of a very sandy nature, of that peculiar appearance assumed by drift derived from granite disintegration, and it is possible that a considerable area of that rock may be concealed here.

The track from Mayfield towards the Sassafras passes over much of this sandy country, extending as far as the crossing over the Boro Creek at Virginia Water, the residence of Mr. Peter Roberts. Here a fine alluvial flat has been formed. From this point onwards rough Silurian country is traversed as far as

Tomboye, the station of Mr. P. A. Stuart, although the homestead stands on a patch of basalt, but whether an outlier or portion of a large flow, time did not permit me to ascertain. Descending gradually again over Silurian ground the track joins the main Braidwood coach road, and continues onward until immediately before crossing the Ningie Nimble Creek another outcrop of basalt occurs, near the local post-receiving office. Onwards from this point Silurian rocks seem to predominate in the valley of the Coorong River, which is crossed, until east of the Nerriga Hotel, near the village of Nerriga, a third patch of basalt is observable in the road cutting. After leaving Nerriga the country becomes much more rugged, and a few miles further a rapid descent takes place to the bed of the Endrick or Bulee River, a rocky, well-watered stream, also like the preceding watercourses a tributary of the Shoalhaven River. Overlooking it, on the west side, is again a basaltic escarpment. The road, a main one by-the-bye, immediately after crossing the river leads up the latter on the east side, partially in the bed, and a more disgraceful piece of road planning could not have been devised. The four basaltic outliers I have here recorded do not appear to be shown on the "Geological Sketch Map of N. S. Wales."

Throughout the whole of the district so far passed over, the strongest evidence exists of its probably auriferous character, especially from Boro Creek at Virginia Water onwards. Large quantities of scattered quartz are observable, and a few defined reefs were seen. As early as 1851 this district was reported by the Rev. W. B. Clarke\* as an auriferous area. He says, "It" (*i.e.* gold) "also occurs . . . . in all the creeks falling to the Shoalhaven from the Nerriga district." Mr. Clarke also states that gold was found at Boro Flat. Nerriga now seems to be the centre of a promising little goldfield, as several large claims are being worked for alluvial gold along the Shoalhaven River and some of its tributaries. Encouraging reports of these are given in the "Annual Reports of the Department of Mines" for 1886 and 1887† by Mr. James Galway, Mining Registrar. He there describes the operations of the Coorong Sluicing Company, who have probably "made the most complete and extensive race in the Colony." This race, a portion of which came under our notice, takes its supply from the Coorong River, and is some twenty-four miles in length.

From the Endrick or Bulee River a very rapid ascent takes place up the steep short spurs of Mount Bulee, as the western portion of the Sassafras plateau is called, the road ultimately

\* Votes & Proc. Leg. Council N. S. Wales, 1851, 121-a (Geol. Surveys), p. 86; also *Researches in the Southern Goldfields of N. S. Wales*, 1860, p. 20.

† *Ann. Report Dept. Mines N. S. Wales for 1886 (1887)*, p. 73, and *Ibid* for 1877 (1888), p. 79.

passing through the "Gap," a break in the precipitous and rugged escarpment of Hawkesbury Sandstone, which here unconformably overlies the untilted Silurian rocks. The latter can be seen almost vertical along the river-bed road previously mentioned, with a general north and south strike, the junction of the Silurian and Hawkesbury rocks taking place a little below the escarpment.

The plateau now reached, and of which Mounts Bulee and Sassafras only form portions, consists of a high tableland of Hawkesbury Sandstone, and possesses many features in common with the physical aspect of the district north of Port Jackson. The Bulee escarpment exhibits some grand examples of rock weathering, the particular form here taken being the castellated, producing large detached buttresses gradually decreasing upwards, and disintegrating in thin layers or laminae, like so many pancakes piled one on the other.

From above Bulee Gap the road proceeds over the tableland, now rising, now descending, but never to any great extent, until the summit of Mt. Sassafras is insensibly reached. A short distance before Mr. Greg's accommodation house comes into view, a marked change takes place in the appearance of the ground, which suddenly passes from the glistening sandy soil of the Hawkesbury Sandstone to a rich red and brown loam, resulting from the decomposition of the basaltic rock of which the summit of the mount is composed, but when first struck the latter rock appears only as cappings to the low spurs of sandstone. The basalt is described by Mr. C. S. Wilkinson as intrusive,\* and I have been favoured by my colleague, Mr. W. Anderson, of the Geological Survey, with the following notes on this rock from specimens collected by us. "It is a dolerite consisting of triclinic felspar, augite, olivine, and magnetite, but none of the minerals showing much decomposition. The olivine contains many included crystals of magnetite, and neither it nor the augite show distinctly crystalline outlines, the latter occurring as large irregular shaped pieces, in which are embedded both felspar and olivine, showing that it was one of the latest minerals to crystallize out."

At the Gap our attention was called by Mr. C. H. Roberts to a large branch of fossil wood, which had been obtained *in situ* in the Hawkesbury Sandstone. It is silicified, microscopic sections failing to yield more definite details than the fact that the wood is probably coniferous.

Mt. Sassafras is the highest point on the watershed between the heads of the Clyde River on the south, and the Ettrema and Danjera Creeks, branches of the Yalwal Creek, a tributary of the Shoalhaven River, on the north. It is stated to be 3,125 feet above sea level, and rises considerably higher than the tableland around it.

---

\* Ann. Report Dept. Mines, N. S. Wales, for 1885 (1886) p. 132.

The general physical features of the Sassafras Tableland, on either side the watershed are simple but marked, shallow, open, basin-like gullies, and wide flats, surrounded by low steep scarps of weathered rock, the dividing ridges covered with stunted timber, or forming open heaths and scrubby spaces, and the flats usually swampy and clothed with coarse grass. These spots are in fact swamps and feeders for the headwaters of the creeks previously named. On the south, in addition to the Clyde River, the Endrick branch known as the Bulee Creek, takes its rise in offshoots from Mt. Sassafras, a long narrow north and south ridge separating the former from the two latter. The Clyde River, two or three miles from its source forms a precipitous ravine, or gorge, 600 feet deep. The basaltic spurs and summit of Mt. Sassafras support a vigorous growth of Messmate, the change to a more stunted form of Eucalypt, the moment the Hawkesbury Sandstone is reached, being a most marked one.

The gullies on the north and north-easterly aspect of the Sassafras present quite a different character, being very deep, with steep sides, clothed by a dense subtropical vegetation of vines, creepers, tree ferns, various large Eucalypts, and the handsome Sassafras tree (*Doryphora sassafras*), from which the general plateau takes its name. This beautiful tree occurs throughout the Illawarra country, following the coast region, but it is particularly abundant hereabouts. A magnificent view is obtained from the higher parts of Mt. Sassafras where the ground has been cleared, over the Shoalhaven Valley and Jervis Bay, with Mount Cooloomgatta in the distance, frequently seen above the floating clouds of the low ground. The course of the creeks previously mentioned, flowing to the northward, is particularly well marked, from the scarp-like outline assumed by the Hawkesbury rocks at the margin of the deep gorges which they have cut.

The Clyde River,\* about three miles from its source in the Sassafras swamps, in a fine deep ravine, with similar branch gullies presenting high perpendicular precipices of sandstone, producing scenery closely resembling that of the Blue Mountains, supporting a subtropical growth, which renders progression very difficult. Deep waterholes and falls are numerous, and the bed of the river is generally rocky and encumbered with huge boulders and fallen blocks. A few years ago the Coal Measures were discovered in this river underlying the Hawkesbury Sandstone, and the seams of coal were reported† on by Mr. N. Taylor, of the Victorian Geological Survey. We visited the seams in question, situated in the Parish of Endrick, three 640 acre blocks

\*A short sketch of the Geology of the Clyde River was given many years ago by Mr. Alexander Berry, in a paper entitled "On the Geology of part of the Coast of New South Wales." [Barron Field's Geographical Memoirs of N.S. Wales, pp. 246-248 (Svo, London, 1825).]

†His Report appeared in the *Milton and Ulladulla Times*.

having been taken up for the purpose of prospecting the measures. A full report was subsequently made by the Government Geologist, Mr. C. S. Wilkinson,\* in which he gives the following general section :—

Hawkesbury Sandstone and conglomerates	...	300ft.
Marine beds, conglomerate, sandstone and shales.		200ft.
Coal Measures, bituminous shales, sandstones, coals, and kerosene shale	... ..	120ft.
		620ft.

He mentions three coal seams, two of which only came under our notice. The lowest, including its bituminous and shaly partings, is sixteen feet thick ; fifty feet above this are Nos. 2 and 3, which we saw. The immediate coal-bearing measures seemed to me to be about fifty feet thick above these seams at the point where we struck them, the uppermost or No. 3 being three feet, and the lower or No. 2 about two feet in thickness, separated by a few feet of strata. The fifty feet of measures above are generally seamed with thin irregular bands of coal of no workable value. The kerosene shale is poor in quality. The measures are very flat, not dipping at a greater angle than 4" to 6" in a south-westerly direction.

Mr. Wilkinson remarks that the upper part of No. 1, or the lowest seam, which contains four feet nine inches of workable coal, will yield after due allowance for loss and waste in getting, at the rate of 3,778 tons of large coal, and 1,259 tons of small coal per acre.

In the present condition of the country the working of these seams is hopeless, the simplest method would probably be by sinking from a convenient spot on the Hawkesbury plateau above. Mr. Wilkinson states that to the westward the Coal Measures do not extend beyond Narriga, where the Siluro-Devonian gold-bearing formation rises to the surface. So far as our rapid movements would allow me to judge, the area to the westward of the Clyde River occupied by this formation must be much curtailed. So far no indications presented themselves of an outcrop of Coal Measures during the ascent of Mt. Bulee, and the probability is that in this direction they have thinned out. The presence of the kerosene shale enables the position of these beds to be ascertained with tolerable accuracy. The researches of the Geological Survey Officers appear now to have placed it beyond a doubt, that the Lower Coal Measures at Greta, Port Stephens, Hartley, Joadja Creek, and other places, are always accompanied by bands of this mineral. The presence of the latter in the Clyde section will therefore support the reference of the coal-bearing beds exposed there to the Lower Coal Measures likewise, in

\* Ann. Report Dep. Mines, N.S. Wales, for 1885 (1886), pp. 131-2.

which case the fossiliferous marine beds above will fall into the Upper Marine Group of our Permo-Carboniferous System.

*Ethnology.*—Mr. C. H. Roberts informs me that the neighbourhood of the Sassafras was at one time a great refuge ground for those aborigines who had offended against their own unwritten laws, especially those referring to the connubial state. The main offence was that of lubra stealing, great enmity then existing between the Braidwood blacks and their neighbours the Maneroo tribe.\* One of their customs appears to have been this:—Should the offending party be caught by the pursuing tribe, when travelling in company with the kidnapped gin, the guilty pair were simply brought back to their place of departure, and the male was then forced to undergo the ordeal of spear-throwing.† This consisted in having one hundred spears cast at him when stationary, by five men as fast as possible, when the dexterity displayed by the culprit in avoiding them is said to have been marvellous. Should the man succeed in escaping without fatal injury, the matter was considered as settled, honour satisfied, and the woman was allowed to remain with him as his wife. On the other hand, should the runaways be found cohabiting at the haven of refuge, dire vengeance was at once administered, the man killed, and his body disposed of in the manner we found the object of our search at the Sassafras. Mr. Roberts states that from some superstitious custom the legs were severed at the knee, but in this particular case it had not been done. Instead, the femora had been cleanly divided high up on the body of the bones, and then the legs doubled up on the trunk, following a *post mortem* method of preparation customary with several tribes of the aborigines. The right femur, however, had been divided by a direct oblique clean cut about the commencement of the body, and the left tibia had been smashed by a direct heavy blow with a blunt instrument just above the lower end of the body of the bone, and the injury presents the appearance of having been done previous to death.

We hoped to have found these remains in the mummified state, the condition in which they were seen by Mr. Roberts some years ago, but the lapse of time, notwithstanding protection from the elements, had almost completely destroyed the dried sinews. Nevertheless, the whole of the upper part of the trunk is osteologically entire, held together by portions of the soft tissues. The body was deposited in a small recess in the Hawkesbury Sandstone escarpment at the Round Hill, about six miles north

---

\*The sea-board of this part of N. S. Wales was occupied, according to Dr. J. Fraser, B.A., by the Murring tribe. (*Journ. R. Soc. N. S. Wales*, 1882, xvi., p. 206, *note*.)

†A similar custom appears to exist in a more or less modified form in several tribes, Mr. Froggatt mentions it as practised by the Kimberley blacks. (*Proc. Linn. Soc. N. S. Wales*, 1888, iii. (2), p. 653.)

of the Sassafras, at one of the head gullies of a tributary of the Yalwal Creek, probably the Bundundah Creek. It would appear to have been placed on its back, a rather uncommon position amongst the aborigines of N. S. Wales, lying on the 'possum cloak, the pattern of which Mr. Roberts says was at one time plainly visible. The corpse was disembowelled, and the abdominal cavity filled with Eucalyptus leaves, a constant custom with the Braidwood blacks. The recess containing the remains was some five to six feet from the ground, and of small dimensions, and the bones of the limbs had to some extent been disturbed, but considering the long number of years since the body was placed in its then position, it was surprisingly perfect, all the bones being present except the left fibula, part of the sternum, and most of the hand and foot bones. The skull is in excellent preservation, and the teeth very sound. In addition to the severance above the knee of the right femur, the left ramus of the lower jaw, under the last molar, and in advance of the angle, is fractured. The fracture seems too clear to be the result of a blow, still it may have been. The right zygomatic arch has unquestionably been smashed in by a blow, as the malar bone is caved-in longitudinally in its widest part, just posterior to the orbit.

No implements or weapons were found with the skeleton. Two excellent tomahawks found in the district were presented; one from the Endrick River, by Mr. Mark Piercy; the other from the Sassafras itself by Mr. F. West. The former is a narrow oblong weapon of a dioritic rock, ground to a cutting edge on both faces. The latter is much heavier and larger, of the same material, similarly ground, and oval and smooth on one face, fashioned on the other. Both were pebbles.

*Zoology.*—The neighbourhood of Mayfield, hitherto so prolific in Marsupial life, was found to be practically deserted. We saw individuals of *Macropus major*, Shaw, and *Halmaturus ruficollis*, Desm. We obtained the black variety of *Dasyurus viverrinus*, Shaw, a female with five young in the pouch in an early stage of development. The Wombat (*Phascologmys Mitchelli*, Owen) was at one time an inhabitant of the Sassafras Tableland, a few burrows being observed here and there, but it is reported not to exist now. In the dense scrub a Paddymelon (*Halmaturus thetidis*, F. Cuv.) was secured, and its young with it. These small graceful Wallabies appear to keep closely within the thick vine scrub, and are difficult to obtain. This specimen is of great interest as illustrating the large size, as compared with that of the mother, to which the young grows before quitting the pouch, in this case twenty inches from the snout to the tip of the tail.

Throughout the journey Birds were not found to be by any means plentiful. At Mayfield the Cuckoo (*Cuculus inornatus*, Gould) was observed, and this would appear to be rather early for this bird, as frosty nights still prevailed, and even snow fell

at least fourteen days after its arrival. One of the Black Cockatoos (*Calyptorhynchus funereus* Shaw) was seen, and from the general behaviour and noise made by the flock, preparations were clearly being made for breeding. The Rosehill Paroquet (*Platycercus eximius*, Shaw) was very plentiful and in fine feather.

The Sassafras Tableland, and more particularly the immediate neighbourhood of the Mount itself, is a well known locality for certain birds. For instance, the Gang-Gang (*Collocephalon galeatum*, Latham) in small flocks of five to seven individuals was seen on several occasions, and specimens obtained; the King Parrot (*Aprosmictus scapulatus*, Bechst.) seen but not captured, and evidently now rare there. The Laughing Jackass (*Dacelo gigas*, Bodd.) was found to be very plentiful, and in good feather. The specimens shot appear to be finer and of larger size than those usually met with in more open forest country. The Wonga-Wonga (*Leucosarcia picata*, Latham) was well known here, but this fine pigeon has been almost exterminated. One example of the rarer Scrub-Thrush (*Geocichla lunulata*, Latham) was shot in the vine scrub by Mr. Alfred Stuart. The White-winged Corcorax (*Corcorax melanorhamphus*, Vieillot) was common in large flocks, and very tame. The pleasant note of the Brown Thrush (*Collyriocinclu harmonica*, Latham) betrayed its presence throughout the more open ground near the summit of the Mount; and the Coach-Whip (*Psophodes crepitans*, V. & H.) was equally noticeable by its peculiar and characteristic note. The Satin Bird (*Ptilonorhynchus violaceus*, Vieillot) frequents this locality in large flocks, feeding on the berries of the wild raspberry, and always accompanied by a few old full plumaged males. Lastly, the rocky gullies and escarpments afford excellent cover for the Lyre Bird (*Menura superba*, Davies), which undoubtedly exists here in certain spots in large numbers, and I would more particularly point out the neighbourhood of the Bulee Gap. We heard them in great force here when passing through on our way up from Nerriga.

Little need be said of the Reptilia. Our specimens have been named by Mr. J. Douglas Ogilby, who has determined amongst the frogs *Lynodynastes dorsalis*, Gray, from Mayfield, and *L. tasmaniensis*, Keferst., from the Sassafras. Numerous examples of *Pseudophryne bibronii*, D. & B., from both localities, and a few individuals of the rarer frog *Crinia signifera*, Girard, also from Mayfield, and the Sassafras. The Lacertilia are numerous represented by *Lygosoma mustelinum*, O'Shaun., a number of other forms of the same genus, at present unnamed, and an example of *Egernia kingi*, Gray.

*Insecta*.—Throughout the whole Silurian area between Tarago, Mayfield, and the Bulee River, the prevalence of white-ant hills is a very marked feature, some reaching as much as seven feet high. They are conical in shape, spreading at the base, and usually of a light yellow colour. On the Sassafras Tableland the "hills" become



much less frequent, and only occur in sheltered situations. This is probably due to the more exposed situation, and possibly also to the less favourable medium, in the gritty tableland soil, for constructing their nests.

The following Coleoptera have been determined by Mr. A. Sidney Olliff, Entomologist to the Australian Museum, from our gatherings :—

*Carabide*—

Notonomus variicollis, <i>Chaud.</i>	...Sassafras
Prosopognus Boisduvali, <i>Cast.</i>	... „
„ sp. (probably new)	... „
Nov. gen. et sp. ( <i>Broschinae</i> )	... „

*Cleride*—

Stigmatium Mastersi, <i>Macl.</i>	...Sassafras
-----------------------------------	--------------

*Tenebrionide*—

Cardiothorax Castelnaudi, <i>Pasc.</i>	...Sassafras
„ sp.	... „
Promethis angulata, <i>Erich.</i>	...Sassafras & Mayfield
„ sp.	... „
Meneristes laticollis, <i>Bois.</i>	... „
Toxicum, sp. nov. ?	... „
Meniphilus nigerrimus, <i>Boisd.</i>	... „
Dædrosis ambigua, <i>Bates</i>	... „
Adelium calosomoides, <i>Kirby</i>	... „
„ poreatum, <i>Fab.</i>	... „

*Curculionide*—

Psalidura abnormis, <i>Macl.</i>	...Sassafras & Mayfield
Sclerorrhinus interruptus, <i>Macl.</i>	... „
Acantholophus echinatus, <i>Guér.</i>	... „
Apertus tuberculatus, <i>Gyll.</i>	... „
Poropterus ellipticus, <i>Pasc.</i>	... „

*Lucanide*—

Passalus, sp.	...Sassafras
---------------	--------------

*Cerambycide*—

Coptocercus rubripes, <i>Bois.</i>	...Sassafras
------------------------------------	--------------

*Elateride*—

Monocrepidius, sp. nov. ?	...Sassafras
„ sp.	... „
Lacon caliginosus, <i>Guér.</i>	... „

The new genus of Carabide is a very interesting form only previously known from the Australian Alps. *Stigmatium Mastersi*, *Macl.*, is common at the Sassafras. Amongst Orthoptera two species of *Blatta*, and *Anatostoma australasicæ*, *Serv.*, were obtained at Mayfield.

The Mollusca, named by Mr. J. Brazier, C.M.Z.S., consist of *Helices* and a few shells from Boro Creek. Although there

was abundance of water and weed in the latter we only obtained an *Ancyclus*, perhaps a narrow variety of *A. australica*, Tate, and *Physa ciliata*, Ten. Woods. On the flat below Mayfield here and there we found *Helix* (*Charopra*) *funerea*, Cox, plentiful under logs and split wood. On the Sassafras Tableland three species were met with, either under old logs or bark, or in old stumps between the bark and the wood. They are *Helix* (*Pomatia*) *gulosa*, Gld., *H.* (*Dorcasia*) *brevipila*, Pf., and *H.* (*Rhytida*) *capillacea*, Fer.

*Botany.*—Time did not permit of much attention being paid to matters botanical. Scattered over the open low scrubby portions of the Sassafras Tableland we found a most beautiful reticulate lichen, which Mr. T. Whitelegge provisionally referred to *Cladonia retipora*, Sprengel, a reference subsequently obligingly confirmed by the Rev. Dr. W. Woolls, F.L.S.

The latter, in his "Contribution to the Flora of Australia," refers to it as follows:—"The most interesting lichen that I have seen in Australia is *C. retipora*, . . . . from the vicinity of Berrima, . . . . but as the species was described by Sprengel many years since, I think that it must occur somewhere nearer the coast. It grows to the height of several inches. . . . As it becomes old, it assumes somewhat a coralline appearance, becoming nearly white. My learned friend, Dr. F. Mueller, informs me that *C. retipora* is common in the glacial regions of Tasmania and New Zealand." It forms one of the most attractive plants growing on the more open and usually dry flat spaces on the tableland, usually sheltered by a few low bushes. It is locally called 'Coral,' but botanically is evidently little known, and it is, therefore, with much pleasure that we are able to fix a well marked habitat. It grows at heights between 2,000ft. and 3,000ft., and in masses from nine inches to one foot in length,

On the heights near Mayfield Trigonometrical Station, we found a very peculiar fungus protruding from the ground only within the shade of the She-oaks (*Casuarina*). It is to be regretted that it was met with only in the dead state, and in consequence Baron von Mueller, who was kind enough to examine specimens, would not venture to name it. It was, however, pointed out to the writer by the Rev. Dr. Woolls, F.L.S., that the fungus in question has many points in common with the genus *Phallus*. The stipe is elongated, simple or bifurcate, each portion bearing at its apex a capsule.

The Sassafras (*Doryphora sassafras*) is remarkable for the pleasant aromatic odour emanating from the leaves when bruised, and a bitter principle, which can be extracted from the bark by infusion and used as a tonic. The tree grows to a height of one hundred and twenty feet, with a diameter at the butt of about three feet.